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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,158	06/13/2001	Toshio Matsumoto	209791US2	3648

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ALEXANDRIA, VA 22314

EXAMINER

HARTMAN JR, RONALD D

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 06/08/2004

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/879,158

Applicant(s)

MATSUMOTO, TOSHIO

Examiner

Ronald D Hartman Jr.

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2001.
2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☐ Claim(s) _____ is/are rejected.
7) ☒ Claim(s) 1-14 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 13 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification is objected to because of the following deficiencies:
 - [0037]; line 3, the condition (equation) does not make sense; there appears to be missing an equals sign and a multiply sign.
 - [0042]; line 4, element 1a of Figure 7 does not reflect what is disclosed in this section. Specifically, there appears to be an "s" term missing from the second term in parentheses.
 - It is noted that although the following list may not be all-inclusive, the applicant is kindly asked to aid in the examiner in correcting any and all possible mathematical notation errors as well as other minor typographical errors.

Drawings

2. The drawings are objected to because Figure 7; element 1a appears to be missing a term (s) in the second term in the parentheses. Also, Figure 8; element 1 appears to be missing a term (p) in the second term in the parenthesis as well. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. The claims, 1-14, are objected to because they include reference characters that are not enclosed within parentheses.

A non-exhaustive listing of claim 1 deficiencies includes, but is not limited to, line 6, "x"; line 7, "e" and "x"; line 8, "r"; line 10, "k1"; and line 17, "k2".

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

All claims (1-14) should be reviewed and changes made accordingly, as only claim 1 was specifically addressed, as pointing out every instance would create an undue burden on the examiner.

Furthermore, as per claim 1, since "n" is only defined to be an integer, it is unclear how the instant invention intends to deal with a situation wherein the value of "n" is zero. In this instance, the nonlinear inner positive feedback loop (second loop) changes and essentially negates the effects of the first inner negative feedback loop, so the examiner is confused as to what would happen in this situation.

Allowable Subject Matter

4. Claims 1-14 are allowed over the prior art of record.

As per claims 1-14, specifically independent claims 1 and 7, the prior art of record fails to teach or adequately suggest a control apparatus for controlling a second order system, wherein an outer loop executes negative feedback based on a deviation, a first inner feedback loop to provide negative feedback, which is obtained by multiplying a gain by a differentiated value, to the deviation, and also comprises a second inner feedback for providing positive feedback based on the equation:

$$- k_2 (dx/dt) \cdot |e|^n$$

where $n = 1, 2, 3, \dots$

and k_2 is a second gain and e is the deviation.

The closest available prior art was issued to Losic et al., U.S. Patent No. 5,034,872. Losic teaches a current free synthesis of improved parameter free zero impedance converter wherein a outer negative feedback loop, an inner positive feedback loop and an inner negative feedback loop are used to determine voltage differences so that commands may be formed for a angular shaft speed.

Losic is silent with respect to the aforementioned features of at least claims 1 and 7, specifically, Losic does not adequately teach or suggest a second order system being controlled, the specific equation for the second inner positive feedback loop, in combination with the other claimed features or limitations as claimed by the claimed invention.

Conclusion

5. This application is in condition for allowance except for the following formal matters already addressed above. Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald D Hartman Jr. whose telephone number is 703-308-7001. The examiner can normally be reached on Mon. - Fri., 11:30 am - 8:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 703-308-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ronald D Hartman Jr.
Art Unit 2121
May 19, 2004


Anthony Knight
Supervisory Patent Examiner
Group 3600